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On

The Early Delivery of the Placenta when Previa

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ON THE EARLY DELIVERY OF THE PLACENTA WHEN PREVIA, WITH THE RELATION OF A CASE OF SPONTANEOUS SEPARATION OF THE PLACENTA WITHOUT HEMORRHAGE.

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THE first case of spontaneous separation of a placenta previa at full term which I ever saw, and indeed the second case of labor I attended, was in this my native city, while I was a student in the office of my brother, Dr. O. H. Taylor. There was excessive hemorrhage, a rapid delivery, both mother and child being saved.

After an interval of many years I find myself again in the same city, addressing an audience of the most distinguished obstetricians of this country on the subject of spontaneous separation of the placenta, when centrally implanted, unaccompanied by hemorrhage. The views which I now hold with regard to the nature of this complication and its proper management differ widely from those taught me in my student days by my preceptors, Drs. James, Dewees, Beattie, Hodge, and Meigs; and it is the fact that such differences of opinion exist, also, among authorities of equal eminence, both in this country and abroad, which, as well as the importance of the subject, will be my apology for now presenting to this Society the following observations.

The differences of opinion regarding this subject relate to all its phases, namely, the physiological function of the cervical portion of the uterus; the relative frequency with which the placenta is implanted at different points on the uterine walls; the sources of hemorrhage; the physiologi-

cal delivery of the placenta when it is previa; and the proper mode of procedure when artificial aid is required.

Each of the subjects I have named has already been the theme of harsh and almost endless controversy, and all are still considered as *sub judice.*

The causes of malposition, the frequency of its occurrence, and the sources of the hemorrhage, I shall not dwell upon, but shall confine myself to the consideration of the normal changes which occur in the cervix during pregnancy, and to the influence they may exert upon the development and expulsion of the placenta, when it is attached over the outlet of the uterine cavity.

Ruskin says that, "A downright fact may be said in a pleasant way, and we want downright facts at the present, more than any thing else."

I hope, therefore, that I shall follow his opinion, and that what I have to say will be founded not so much on a theoretical basis as upon an experience, by no means inconsiderable, and upon cases which have been carefully observed.

Mrs. H., aged 26, primapara, was attended by me in her confinement, which came off February 8, 1878. She was of a delicate constitution, having a tendency to phthisis. During the early months of gestation, the stomach was a source of some trouble to her. Slight malarial attacks also occurred twice daily. At the eighth month I was summoned to attend her, and decide whether the child was living, as no motion had been felt for several days. The size of the uterus seemed to have diminished, as she said, "to have fallen." No fetal movement was heard; a gentle placental murmur was audible in the lower part of the uterus in the left pubic and iliac regions. When, three weeks afterwards, I was again summoned, labor had commenced; the pains were recurring every half hour, but three hours later there had been no change. At 4 P. M., the pains had become more efficient, occurring every fifteen minutes. An examination revealed a soft cervix of natural length. The os was patulous, no dilatation of the internal orifice being apparent. At 6 P. M. the pains were more efficient, but no more frequent. The os tincæ was dilated to the size of a half dollar. The head supposed to be felt through the cervix was smooth to the touch, and seemed to be covered with the

membranes. Half an hour later the pains were of an expulsive nature, but not severe. On examination the os uteri was open to two thirds of its diameter.

A moderately smooth firm substance was felt, and posteriorly to this a tumor which was supposed to be the head of the child, with a caput succedaneum covered by the membranes This posterior swelling was tapped during a pain, and the head of the child descended rapidly, carrying before it this substance, which proved to be the placenta in a state of thorough fatty degeneration, and not more than four inches in diameter, smooth, and glistening on its uterine surface, and fully one and a quarter inches thick. Scarcely two ounces of blood were lost; there was no flow of any moment after the delivery, until nearly two days had elapsed. The head of the child was slightly hydrocephalic and quite elongated. Precisely a similar condition of the placenta has been noted by me in two previous cases, but in both the child died before labor came on. In the case here referred to, a suspicion existed that syphilis acted as a cause of the morbid change.

Cases of this nature are deemed to be exceedingly rare; indeed, by some authorities their occurrence has been called in question.

Cazeaux, whose opinion has generally been quoted, says that "the hemorrhages are usually considered to be inevitable under such circumstances, yet they may not appear during labor, and the dilatation of the os uteri may be effected without the loss of a drop of blood."

Baudelocque, Leroux, and Pardigon, had previously asserted the same opinion, and Velpeau confirms this view, remarking that the placenta, when previa, may be detached and occupy the vagina without hemorrhage having occurred.

Chapman has cited a case of this nature, confirmed by Rigby; likewise in 1722, according to Velpeau, Petit announced the same idea before the Academy of Medicine in Paris.

Walter's explanation of such an occurrence is, that a larger communication exists between the arterial and venous radicles of the uterus than usual, whereby the blood may pass from the arteries into the veins without escaping.

Mercier believed that the exhalent vessels of the womb are then in a state of contraction, and a perversion of their sensibility exists, which is sufficient to retain the course of the blood.

Moreau remarked that the children at that time are dead, and have been so for several days.

As soon as the infant dies in the womb, the cessation of the fetal circulation occasions changes in the organ, the blood, being arrested in the vessels, coagulates there; the latter retract, or even become obliterated, and no more blood reaches the womb than what is necessary to its nutrition, and hence the dilatation of the orifice may be effected without hemorrhage, notwithstanding the vessels that unite its internal surface to the placenta are torn.

Moreau's explanation received the approval of Cazeaux, that the pathological changes which most often occur in the placenta during gestation, are due to a fatty degeneration of that organ.

Before proceeding to a further discussion of these questions, I will dwell for a few moments upon the physiological delivery of the placenta from the stand-point which I have advocated since 1852.

To do so I must refer to the general error pervading obstetric writings, that the cervix is the seat of placental attachment, consequent on its being drawn up, so as to become a part of the wall inclosing the uterine cavity.

The views which have been current among obstetricians, with hardly an exception, regarding the participation of the cervix in the changes undergone by the gravid uterus, have been, that at some period in the later stages of pregnancy the cervix has become shortened.

The modes in which this shortening has been assumed by them to take place are two, namely: First, by a coalescence of the cervix with the uterine cavity, chiefly through an expansion of the inner os and the super-vaginal portion of the cervix; this process being considered to occur most frequently by a gradual obliteration from above downwards.

The authorities who have adopted this theory have been numerous.

To begin with Hunter, whose plate showing a centrally implanted placenta previa has been copied in all obstetrical works. It will be seen on examination of this plate that the placenta occupies the expanded cervix, the os internum being fully three to four inches in diameter, while the external os is closed. Both Barnes and Playfair adopt this theory, the former giving us not only this diagram, but also two others representing the uterus as divided into three zones. 1. The fundal zone — safe placental seat — upper polar circle. 2. Meridional zone — safe placental seat — post partum hemorrhage. 3. Cervical zone — lower polar circle — dangerous placental seat, the limit of spontaneous placental detachment.

The second diagram of Barnes shows his views regarding the proper mode of detaching the placenta from the os tincæ up to the internal os — which is the limit of the lower polar circle or safe placental seat.

I am not unmindful that, in the discussion which followed Dr. Matthews Duncan's paper, of the 1st of October, 1873, "On the Spontaneous Separation of the Placenta," Dr. Barnes denied that the placenta was ever attached to the external os, and that he referred to a drawing of a uterus at the fifth month of gestation which he sent to Matthews Duncan, and in which the cervix was represented as having a length of five and a half inches. This illustration was published in the "Edinburgh Medical Journal," of March 19, 1859. This specimen, however, can be of no value as representing the condition of the cervix uteri at full term — a question having a direct bearing upon the proper mode of management in cases of placenta previa. Yet if Dr. Barnes admits this specimen to have been an illustration of his views regarding the non-coalescence of the cervix with the cavity of the uterus during gestation, then a different explanation must be adduced, regarding the cause of hemorrhage, and the physiological expulsion of the placenta, than the one to which he holds.

The hemorrhage, says Dr. Barnes, occurring at the time of labor is to be attributed to the active expansion of the cervix, casting off or detaching itself from the placenta, and he asks: "Is this consistent with clinical observation? . . . . The true explanation is, I submit, the very reverse of that generally accepted. What is the part endowed with the most active growth? Is it not the ovum, the placenta? The growth of the cervix is secondary, it is the result of the stimulus of the ovum. The first detachment of placenta, then, arises from an excess in rate of growth of the placenta over that of the cervix, a structure which was not designed for placental attachment, and which is not fitted to keep pace with the placenta. Hence loss of relation; hence, the placenta shoots beyond its site, and hemorrhage results." [1]

Again, referring to the cervical zone, Dr. Barnes says: "All placenta fixed here, whether it consist in a flap encroaching downwards from meridional zone, or whether it be the entire placenta, is liable to previous detachment."

The theory of Cazeaux and Jacquemier is the very reverse of that of Barnes. Referring to the cause of placental detachment, they say: —

"Instead of its being the ovum — the placenta — it is in the uterus in the last three months that the fibres appertaining to the lower third of the womb are developed in a rapid manner, and the cavity of the organ is enlarged in consequence of the distention and growth of the lower part of the womb. The ovum or placenta is far more rapid in its growth in the first six months than in the last three months."

Milne, on this point, observes that, "Whether the theory of Barnes, or that of Jacquemier and Cazeaux, are accepted, they are readily reconcilable with the fact, that hemorrhage does not begin till labor has commenced at term."

Respecting coalescence of the cervix, which is an additional cause, Cazeaux says: "In the last two weeks its length, hitherto intact, diminishes very rapidly and ends by

[1] *Lectures on Obstetric Operations*, New York, 1871, p. 370.

complete obliteration; silent and painless contractions take place usually a week or ten days before the onset of labor pains."

Duncan testifies to the same mechanism of dilatation of the cervix, in the March number of the "Edinburgh Medical Journal," 1859.

"In discussing the subject I intentionally omit the latter days of the ninth month of pregnancy, as silent and painless labor is often really going on. I mean that contractions of the uterus usually without pain are effecting the complete obliteration of the cervical canal."

As late as 1873 this view is reiterated. He adopts the views of Wietbrecht, who, he thinks, anticipated Cazeaux as far back as 1750. Wietbrecht's specimen was, however, only eight months advanced in pregnancy.

Angus McDonald presented a morbid specimen at full term of a patient who died suddenly, which was inspected also by Duncan, and which specimen, so far as my knowledge goes, is the only one at full term that any of the authorities cited have presented or exhibited; all the others having been between the sixth, seventh, and eighth months, and without relation to the subject.

McDonald says, in his remarks before the Obstetrical Society of Edinburgh, February, 1878, in the discussion of the paper of Charles Bell on Placenta Previa, "that this specimen showed that the cervix was intact, and in no wise used up in the amplification of the lower segment of the uterus." But independent of this fact, the using up of the cervix, he held and endeavored to prove, did not usually commence until ten or fourteen days before labor, and frequently not until the onset of labor pains. That only after the lower uterine segment became stretched, in connection with the development of the cervix uteri under the action of uterine contractions (an occurrence usually restricted to ten days before labor, and at times even up to the onset of labor), was hemorrhage unavoidable."

Our distinguished colleague, Dr. Thomas, in his first paper on the "Prophylactic Treatment of Placenta Prævia," [1]

[1] *Am. J. Obst.*, i., p. 20, 1868.

says in his formulated statement, "Repeated hemorrhages occurring during the ninth month as the os internum dilates under the influence of painless uterine contractions which then occur," etc.

Litzmann entertains the same opinion as Cazeaux, and expressed in the same language; but he expresses a different opinion respecting primaparæ, in whom he considers it takes place from above downwards, and in the multipara from below upwards.

Otto K· stner,[1] in 1877, objected to this supposition, as he terms it, of the cervix even remaining intact until ten or fourteen days before the commencement of labor, and derives his arguments from his microscopical investigations, so far as they show the possibility of limiting the borders of the cervical cavity by means of the cylindrical epithelium which belongs to the cervix, and maintaining that as far as the cylindrical epithelium extends, so far must we recognize the tissues as belonging to the cervix; this view of the subject he deduces from his investigations

The dilatation of the superior part of the cervix occurs during pregnancy, and without preliminary pains. The hyperplasia in the dilated portion comprises the cervical mucous membrane *in toto*, and all its structural elements; the mucous membrane thereby resembles the decidua, the crypts of the cervix being comparable to the uterine glands.

The cervical canal is shortened by the dilatation, so that at the end of pregnancy there remains only a part of the original length of the cervix. A detachment of these membranes from their base cannot be demonstrated during the last month of pregnancy.

In reference to Hunter's plate, which has been copied by nearly all the obstetrical authorities, even to the present time, and to show how innocent and erroneous the application has been, and the fallacious theories based thereon, Dr. Bell, in June, 1878, says: "This was evidently a case of central implantation of the placenta, which was apparently

[1] "Beiträge zur Anatomie der Cervix Uteri." *Arch. f. Gynæk*, xii. 3, p. 383.

attached above the internal os, but, judging from the engraving, there is no indication of its being attached to any part of the cervix."

If Dr. Bell had referred to the antecedent plate in Hunter's work, he would have been fully convinced on that point. In my monograph on "Placenta Previa," 1864, I called attention to this great error, and to the fact that the placenta was attached to the anterior side of the lower part of the body of the uterus, and not to the cervix.

This preparation, which he went to Glasgow to see, he says, was not found there; another morbid specimen was found, however, which showed that the placenta was not adherent to the cervix in advanced pregnancy. It is a beautiful preparation which represents nearly a complete central implantation, but the portion which bulges down into the cervix, after crossing the internal os gives no indication of having been attached to it.

The dilated cervix is comparatively smooth, and there is not the slightest vestige of uterine vessels with open mouths, as there would have been had the placenta been torn from it.

Bandl, of Vienna, at the meeting of naturalists and physicians at Hamburg, in 1877, exhibited a morbid specimen of the cervix uteri taken from a woman who died in the eighth month, after Cesarean section, to show that the cervix is not a simple channel but funnel-shaped, and that a large portion of it flares out into the cavity of the uterus.

He considers that, at the sixth month, in a primapara, the straight portion of the funnel has a length of two to five centimeters, while the flaring portion has a length of three centimeters. The same cervical membrane covers both these portions. The fetal membrane is closely adherent to the uterus only above the edge of the flaring part of the funnel, and its lower margin forms a circle of six centimeters in diameter.

Towards the end of pregnancy the lower part of the uterus, the flaring portions of the cervix, soften, and the bag of water projects below the plane of the pelvic inlet.

The straight part now softens, becomes stretched and thinner, and the canal less distinct; that, when labor sets in, the head is separated from the vagina by a very thin tissue only, and the vaginal part of the cervix disappears in the wall of the uterus.

Cases of placenta previa show a complete absence of the flaring portion of the funnel with the covering of cervical membrane, as do also all those cases in which the placenta is found adherent even as low as the external os.

Referring to the investigations of Bandl, Simpson of Edinburgh, in the discussion on Dr. C. Bell's paper, considers them as a mere dogma, and gives no credence to them, but holds the opinion and views of Leishman, Küstner, as well as the older authorities. Simpson's morbid specimen was exhibited at the same meeting with that of Dr. McDonald. He took occasion, he said, at the time, to point out that the cervix of a uterus in the sixth month of pregnancy was larger than the full term cervix in Dr. McDonald's preparation by three quarters to one inch. He was inclined to believe that the shortening of the cervix by expansion from above during pregnancy, was to form a cup into which the lower part of the ovum, invested by the remains of the decidua reflexa, would be received; this he had sometimes observed to take place. In the case of a patient with contracted pelvis in whom he desired to induce labor, when the finger had passed through the cervical canal to a distance, as he judged, of more than an inch, and the point of the finger over the circular ridge which, at first, he took for the os internum, he found the membrane detached all round the lower portion of the cavity in which the ovum was lying.

It was at the thirtieth week, and no attempt at uterine action was manifested. The finger had, however, to pass a good inch beyond what felt like the ring of the os internum before it came upon the circle of attachment of the ovum to the uterine walls, so that in this case it was probably the widely expanded os internum. If then such an expansion of the supra-vaginal part of the cervix occasionally took

place in ordinary cases, he thought it must as well occur in cases of placenta previa.

This case of Simpson tends to illustrate, I believe, the views of Bandl.

In my monograph on "Procidentia Uteri" I cite two cases at the fourth month of gestation in which the uterus was prodident and they were considered as simply procidentia uteri with hypertrophic elongation of the supra-vaginal portion, that is, the portion between the body and the cervix proper. No suspicion of pregnancy existed after these investigations, the patient denying the fact. The sound in one passed fully eleven inches from the os tincæ to the fundus, and in the other ten inches, certainly the body of the uterus could not be so long at the fourth month of pregnancy. The supra-vaginal part was quite thin and long.

In two or three days the uterus was felt round and globular, and of the size that we might expect after abortion at the fourth month. If we accept, as I freely do, the investigation of these celebrated anatomists, which I have so often seen confirmed in cases of procidentia uteri, I agree with them in considering that there is an intermediate part existing in the unimpregnated uterus, between the body and the cervix, which undergoes pathological and physiological changes — lengthening or shortening. This opinion does not in the least militate against the view which I entertain respecting the non-coalescence of the cervix with the body during gestation.

By the descent of the uterus in the cavity of the pelvis this part is shortened, as it is by the ascent with anteversion and anteflexion of the uterine body during gestation as in the case that I have to-day presented with a diagram. When I reviewed this subject lately with regard to this important point, which has such a decided bearing upon the physiology of the delivery of the placenta, referring to the authorities which I have cited, I must admit that I had no conception of how various and diverse the opinions were on this small though important annex of the uterus.

From the examination of more than two thousand five

hundred patients, extending over a period of twenty-seven years, and embracing cases of pregnancy at all stages of its progress; cases of placenta previa; twenty-five post-mortem examinations of patients who had died previous to, or at the commencement of, or shortly after, labor, the opinion which I hold regarding the changes which the cervix undergoes during the progress of utero-gestation may be stated as follows:—

I hold that the cervix uteri does not undergo any effacement during the progress of gestation either in its supra- or infra-vaginal portions, that the superior part does not flatten out or coalesce with the body of the uterus, nor does the inferior part, as Küstner and Bandl have asserted, become lost or used up in the general enlargement of the uterus which takes place, in order to accommodate the growing child.

It is the same cervix as regards its length and structure as exists prior to the commencement of pregnancy, with the exception of the physiological hyperemia and serous infiltration which it undergoes, in order that it may be fitted for the dilatation by the passage of the child's head.

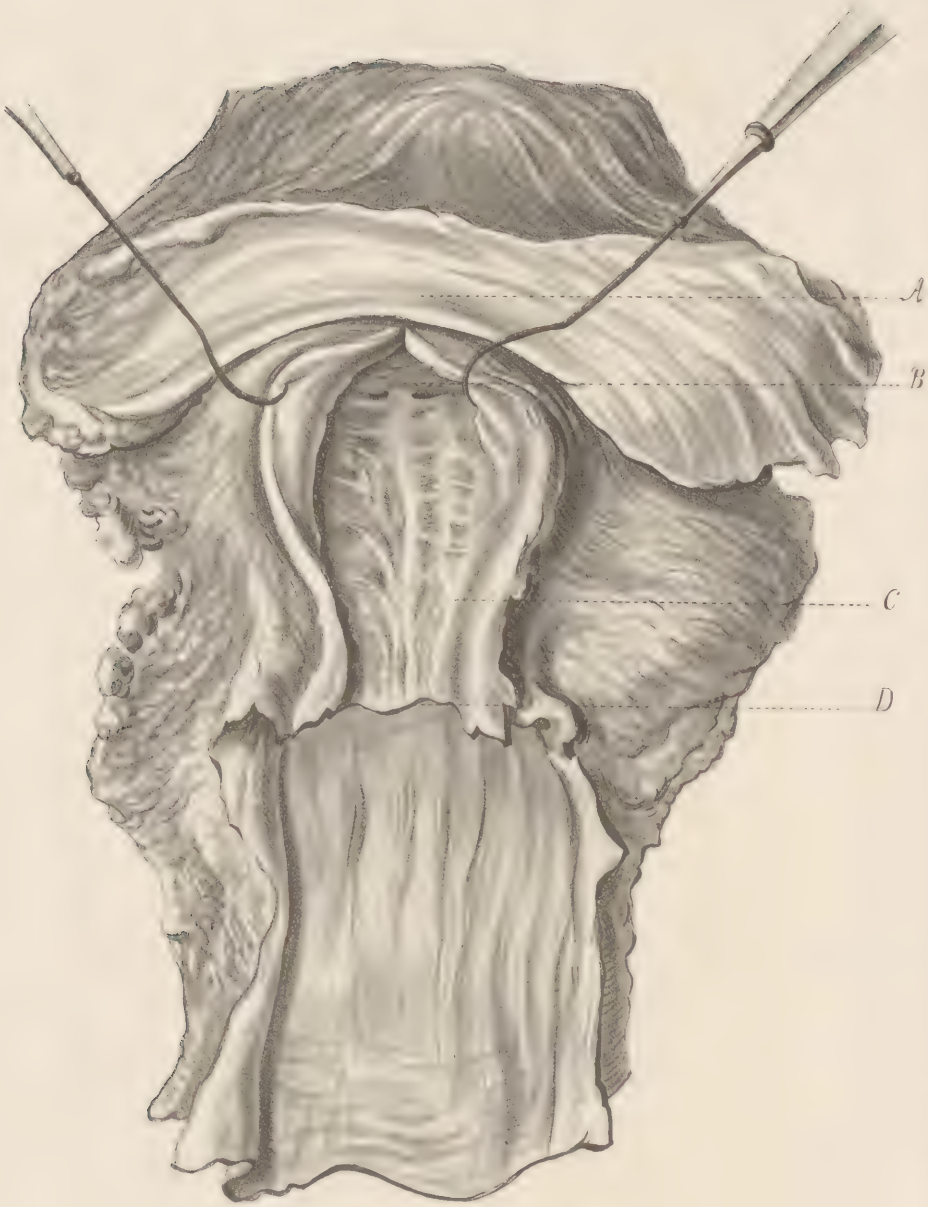
I have, moreover, observed instances in which the length of the cervix has increased during the period of gestation through hypertrophy of the supra-vaginal portion.

An examination of the cervix immediately prior to the advent of labor will show that the transverse and longitudinal folds of its canal have become unfolded and its surface presents a white fibro-serous aspect.

Immediately after the passage of the child through the cervix, its tissue simply resiliates and assumes its former condition, excepting in so far as its muscular fibres have been temporarily paralyzed by over distention, and it is left soft and patulous.

To the touch alone these cases may sometimes give the impression that the infra-vaginal portion has been obliterated as Bandl has asserted, but ocular examination will demonstrate that this impression is due to a more or less complete eversion of the parts.

PRIMIPARA 8 Months.



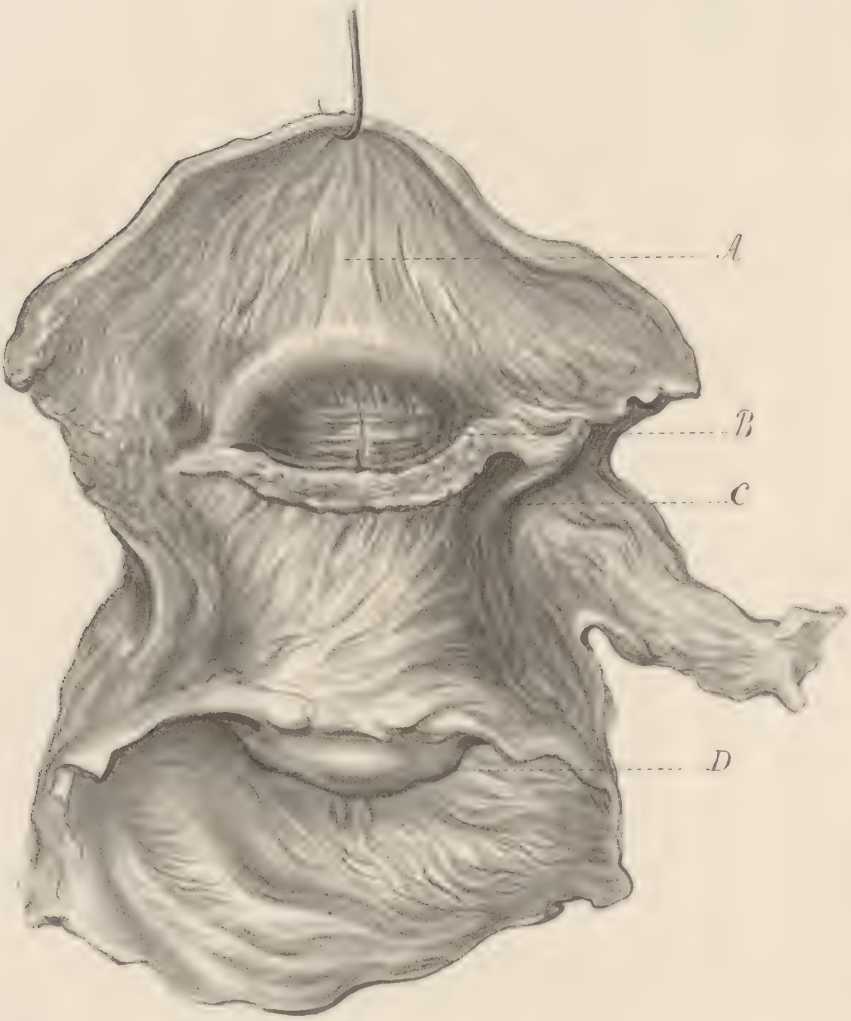
A. Body of Uterus.
B Os internum. Part of the body of Uterus turned up.
C. Cervix opened.
D Os Tincæ.

After nature by R. Kohler.

Armstrong & Co lith. Boston.

MULTIPARA UTERUS, 9 Months.

by actual Measurement.

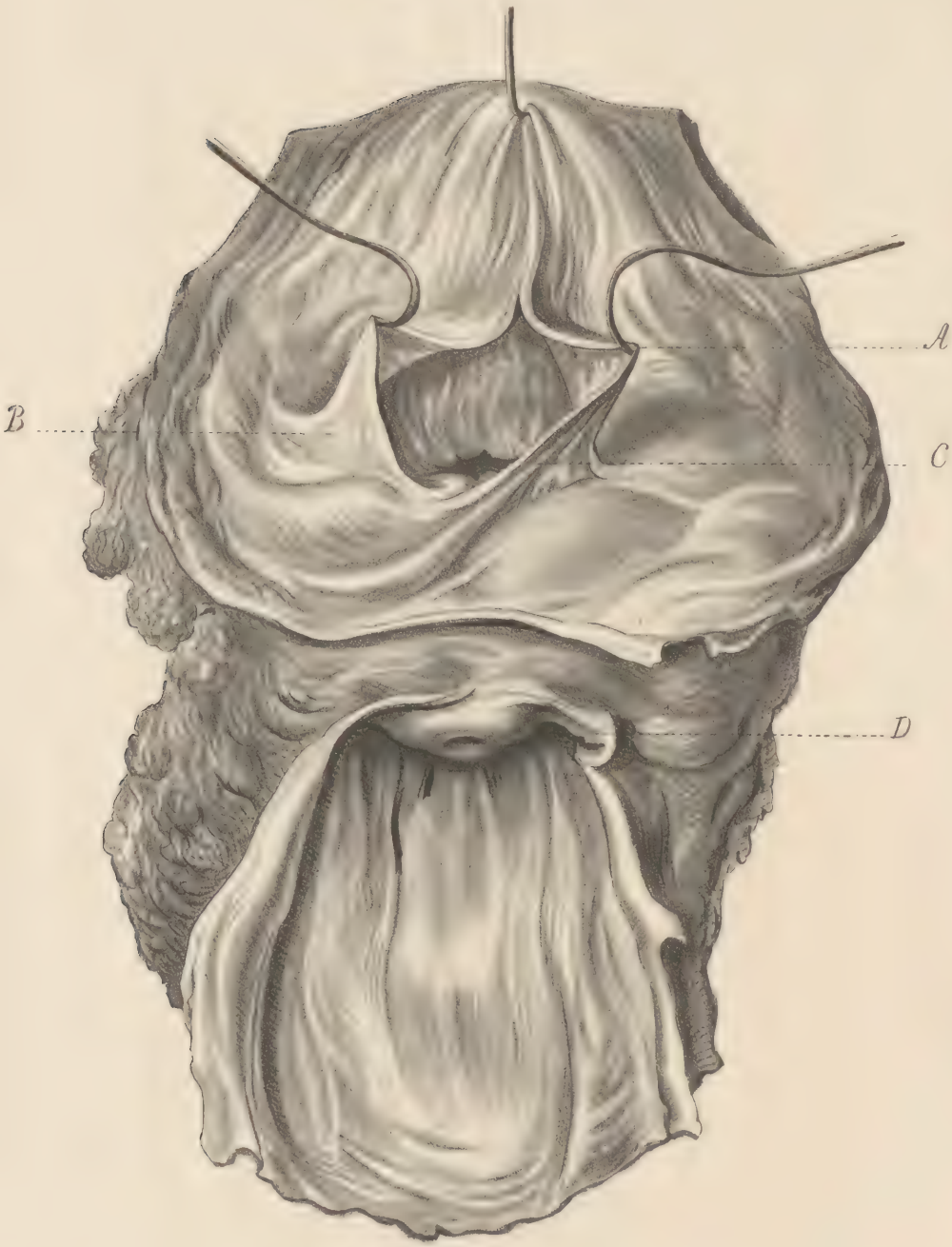


A. Body of Uterus.
B. Anterior Portion cut off.
C. Internal Os Uteri. Length 1½ Meas.t.
D. Anterior Infra Vaginal Portion.

After nature by R. Kohler.

Armstrong & Co lith. Boston.

PRIMIPARA, 8 Months.



A. Body of Uterus.
B Membrana Decidua.
C Os internum of Cervix. Length 1½ Inch.
D Os Tincæ.

After nature by R. Kohler.

Armstrong & Co. lith. Boston.

In order to explain further the view that I hold regarding the manner of spontaneous delivery in cases of placenta previa, I will refer to some remarks which I published in the New York "Medical Record," vol. xii. (1877), p. 644.

Johannes Holst [1] remarks that, "In the first volume of my contributions I described the changes during the latter stages of pregnancy, and then dilated on the views I had expressed in 1853." "Professor Spiegelberg," he says, "discussed the same question in December, 1864, and came to the same conclusion, except with regard to my views that the canal of the cervix takes another direction at the end of pregnancy, forming an oblique angle with the uterine axis, the angle opening backwards. In the last stages the canal, in most cases, approaches more and more the horizontal position.

"The difference in opinion with regard to this question arises from the fact that in the introduction of the finger the direction of the canal and the position of the os against the sacrum are overlooked, the finger is rapidly introduced, the canal is brought into a more or less vertical direction to conform to the direction of the finger; the external os is brought directly opposite to the internal os, and thus the canal is shortened, while its persistence and direction are overlooked."

It affords me great pleasure, in addition to this quotation, to refer to the morbid specimen presented to the Obstetrical Society of Boston [2] by our highly esteemed secretary, Dr. Chadwick, showing at full term not the least change in the length of the cervix, or a modification of its structure. Schroeder adopts the same view.

The exact drawings by my artist, Mr. Koehler, of the morbid specimens, taken soon after death, show the length of the cervix, the internal os, in a primipara nearly occluded, and in a multipara more widely open, — the internal mucous membrane, having the true *arbor vitæ* appear-

[1] *Monatschr. f. Geburtsk.*, ii., p. 251, 1864.
[2] *Am. J. Obst.*, x., 3, p. 448, 1877.

ance, — and the decidua reflexa and vera beautifully delineated on the internal orifice.

In the third drawing the white fibrous structure is distinct from the muscular structure of the body.[1]

I think it must be apparent that even those morbid specimens negative all the investigations that are based upon the touch or the microscopical investigations of Küstner.

Now whether the cervix begins to be obliterated at the sixth, seventh, eighth, or ninth month, or, according to those authorities who entertain the opinion that silent and painless contractions obliterate the cervix uteri, — ten days or two weeks before labor, there can be no difference in the result.

If language means anything, then there is effacement of the cervix, and the placenta must be detached from the internal orifice; and the placenta must attach itself to, or be fixed in the cavity of the cervix, and continue so until labor sets in, or else the placenta must be delivered and the labor terminate.

Is it possible that when the placenta is separated from the fundus or sides of the uterus, a hemorrhage will not ensue, whether the blood flows out or remains in that organ? If it does flow out should not the case be treated as one of accidental hemorrhage, and the patient be delivered?

Gendrin and Puzoz held that even if hemorrhage had occurred, the placenta might form, even afterwards, an attachment to the part.

Is the placenta any more exempt from hemorrhage when painless contractions are effecting the obliteration of the cervix, than when painful contractions occur? No! if expansion of the cervix at the internal orifice occurs even ten days or a week before time, labor will or must follow as a general rule, and if not, then the patient is in jeopardy every hour until she is delivered.

The cervix is acknowledged to be anatomically different

[1] For a further description see my monograph on *Placenta Previa*, 1865.

in its structure from the body, — composed principally of circular fibres, and having a white fibrous tissue, — and physiologically different in its function.

The placenta, if placed there, could not form any attachment, and grow as it does in the body. The body is its proper habitat before labor. It is there that it is originally implanted, and there it remains.

It is immaterial to what part of the uterus the ovum is attached, the fundus, the sides, or the tissues around the Fallopian tubes, or the os internum. The internal orifice is as much closed as the orifices of the Fallopian tubes; it grows *pari passu* with the body in that location as in any other.

Theory is therefore irrelevant, as I conceive, to account for the hemorrhage which takes place under such circumstances, as when it occurs in the ordinary course of pregnancy, owing to any disease of the placenta from moral or traumatic causes. When we consider that the placenta, from the seventh month to full term, is in a constant state of physiological venous congestion or hyperemia; that thrombi are physiologically formed; that the circulation is sometimes obstructed in large portions of the uterine tissue beneath the placental site; and that the placenta is in an abnormal position, we can understand that congestion, inflammation, and apoplexy may occur the same as when it is placed elsewhere, as may fatty degeneration, adhesions over the whole surface of the organ, calcareous or atheromatous deposits, hydatids, etc. Should there be any hemorrhage that springs from the lower part of the body of the uterus when it is previa, it would be considered as arising from a partial expansion of the cervix, producing a separation of the placental attachment, — when they should be considered as of the accidental form, if even disease exists and no separation has taken place.

Hemorrhage may, therefore, arise from any part of the placenta when it is previa, — from its centre, side, or from the large circular sinus or vein around its circumference.

The cervix itself, on its external aspect, sometimes pre-

sents a very vascular appearance, the vessels being large and full, resembling in appearance the hemorrhoidal veins.

The hemorrhage from these vessels on their rupture may be sudden, and the quantity considerable. These kinds of hemorrhages have been falsely attributed to placenta previa. A careless examination may overlook the true nature of the case; an ocular inspection exhibits the source of the bleeding and suggests the treatment appropriate to it.

Another important question has, within the last few years, arisen respecting the appearance of the spot on the placenta when it is previa and central.

This will depend on the pathological state of that organ. Its attachment may be very slender or it may be firmly adherent, so as to require forced detachment as we notice in ordinary labor, though, according to my experience, very rarely.

A pathological process may be going on in this part of the placenta, according to the views of Sirelius of Helsingfors, "that there is an atrophy of the part overhanging the internal os." This certainly was not the case in two instances which I examined carefully, both having reached the full term, — one being a week over her calculation.

Hecker, in reference to this spot being bare, has described an example of it. Kuneke and Schuschardt describe a specimen of placenta which had covered the internal os. In Hecker's case the thinner part was attached directly over the os internum. There was, however, evidence of villous placental tissue: through this thin part, however, the fetus was delivered.

In instances of this nature, if we accept the views of Leopold, the villi of the chorion penetrate into the enlarged serotinal vessels, breaking through the endothelium of those vessels.

The arteries of the serotina empty into the placental sinuses from which the veins directly arise.

The line of demarcation is found to be the same whether separation occurred during labor or was effected artificially

in the post mortem specimen. It is in the loose meshwork, the lower layers, and not in the more compact tissues of the upper layers of the serotina; hence but little of its tissue remains on the placental site, especially at its centre.

A difference of opinion exists as to how the placenta when previa is cast off, — and this rests principally on the anatomical views held; whether or not the longitudinal muscular fibres pervade the cervix anteriorly or posteriorly.

Barnes considers that the os uteri, or os tincæ, is opened by the cervical longitudinal muscular fibres. "They must contract to pull open the mouth. Expansion or dilatation of the mouth is contraction of the cervix; this contraction by shortening the cervical portion of the womb casts off the placenta and exposes the ruptured mouths of the uterine placental tissues."

Murphy anticipated the views of Barnes in this respect, and holds "that dilatation of the os uteri favors the contraction of the cervix. The womb could not open unless the tissue of the cervix contracted upon itself."

Duncan, on this point, remarks "that on digital examination there is found merely a perforation or hole in the lower segment of the walls of the grand uterine cavity, and when term-labor occurs the body of the uterus in its regular contractions acts on the cervix somewhat as the arms pull on the leg of a boot while the foot is being pushed into it."

Bandl asserts that during the first pains there is a shortening or contraction of the muscular fibres inserted in the cervix, the os tincæ is opened, and the vaginal portion of the cervix disappears in the walls of the uterus.

From these views regarding the delivery of the placenta, when centrally implanted, I dissent, and shall justify myself by the highest and most celebrated anatomists and physiologists, such as Deville, Sappey, Guyon, Farre, and Kölliker, who deny that there are any longitudinal muscular fibres existing in the cervix, or, at most, but a few iso-

lated ones, and that only circular ones pervade its structure, producing a closure of its canal, in addition to the contractility of its white fibrous tissues, acting as a dartos muscle.

The opinions of these authorities cannot be rejected; they are founded on too solid and firm a basis of investigation to be denied.

The cervix is, therefore, only an annex; it is a passive organ; it is as much prepared, physiologically, by its passiveness to dilate as the fundus, physiologically, is to contract. If it was not so then the child could not be born; the contraction of the cervix would prevent its delivery. Even the circular fibres, so called, of Boivin, which are generally recognized, and which are all powerful when in a state of contraction to produce the hour-glass, are also passive agents; if they were not the child would be arrested in its descent, when the circular fibres of the body of the uterus contract, and the longitudinal become passive. Who could or would attempt then to force his hand through to effect version or remove a placenta. When the fundal or longitudinal muscles act, the neck being passive, the child's head is driven through the cervix elongating, not pulling it back, to the extent of three or four inches, or according to the diameter of the child's head, and when the widest part of the child's head has passed, the cervix gradually resiliates, and from its natural contractility is reduced to the state in which it was before labor took place.

I have in several instances had the opportunity of observing by ocular demonstration this mechanism or behavior of the cervix during delivery, which adds additional testimony to the above cited physiological and anatomical investigations.

The difference of method, therefore, is this: when the placenta is attached to the body of the uterus, it is detached by the concentric contraction of the uterus after the birth of the child; but in placenta previa by the expulsive action of the fundal muscles, forcing the placenta from its site.

The mortality attending placental presentation is chiefly due to the loss of blood. The hemorrhage may be very considerable even in partial placenta previa, and in complete, even the separation of a portion not larger than a shilling piece, may sacrifice the mother. The first hemorrhage may sacrifice both the mother and child, or only the child; the hemorrhage may be considerable and the child spared, and yet the mother die.

The hemorrhage is, therefore, the great thing to be dreaded. Now, how is this to be avoided? All the methods suggested have a certain utility, but are uncertain in their results, which impels me to select a course which I believe to be more likely to insure a happy issue, when followed at as early a period as possible after the first hemorrhage.

Our first duty is to save the mother, with some expectation that the child may be saved also. Statistics on this point I think are not reliable.

I have seen only sixty-three cases of placenta previa, — forty-nine partial, and fourteen central. I believe that many of the cases of natural labor have the edge of the placenta very nearly touching the internal orifice.

It is more than probable that some of the cases of abortion at the early months may have been cases of placenta previa.

There is not so much fear of hemorrhage when the placenta is central as when it is partial. A large majority of the cases of central implantation have reached the full term or within a few days of it. Sometimes they have gone beyond the time.

The methods which have been adopted are: —

1. The tampon.
2. Version, internal or external, or both.
3. Partial circular detachment of the placenta. (Barnes.)
4. Complete detachment. (Simpson.)
5. Lateral detachment — usually adopted.
6. The forceps.
7. Induction of premature labor.

1. Having satisfied our minds that the hemorrhage is not of the accidental form, when the placenta is previa, or that it springs from external cervical thrombosis already referred to, a careful examination is made to discover whether the cervix is of natural length; soft and patulous; the os tincæ admitting the finger easily; and, this being the first loss of blood, the patient near or at her full time.

The tampon may be resorted to — various means of effecting which have been recommended; the colpeurynter with air or water, sponges saturated with alum, pieces of muslin crowded into the cervix, and the dilators of Molesworth or Barnes. I have preferred, on account of the ease of introduction, its fixedness, and perfect adaptation to the vagina when applied firmly against the cervix, the ordinary surgical bandage — one and one half inches wide, and several feet long. After the external parts have been lubricated the bandage is introduced into the vagina and packed firmly and securely, one end being allowed to hang from the vulva, so that by one pull the whole bandage or tampon may be removed. Sometimes a sponge with a string may be inserted into the cervix if it is partially opened.

The tampon is, of course, only a temporary process to pave the way for internal version, external, or the combined method, or the application of the forceps, should the head present. It not only arrests the hemorrhage, but it produces uterine action; it should remain until labor-pains are established, and be renewed if necessary, after the results or progress of dilatation are ascertained.

The secale cornutum may be given carefully, according to the nature of the case, and given only for the purpose of increasing the uterine action after the tampon is inserted. I do not consider it necessary to bandage the uterus externally, or even the vulva in accordance with some authorities, — there can be no fear of internal hemorrhage with the tampon when the placenta is central; if it is marginal, and the head presents, an early rupture of the membranes may be produced.

After awhile contractions will ensue, and the tampon may be removed, an examination being made in the course of an hour or two, or at most after a few hours. Should the cervix be found diminished in length, and the os tincæ dilated to the size of a half dollar, the internal os will be opened fully three inches, and the placenta separated to that extent, leaving only, therefore, one inch, or at most one and a half inches, to be separated by the finger, according to the diameter of the placenta; the patient can consequently be at once delivered.

2. In central implantation of the placenta the child generally lies cross-wise. After separation of the placenta without rupture of the membranes, external version is to be performed simply by elevating or pushing aside the head through the abdominal walls, and depressing the breech; as we all know, the position of the child's knee will then be near the internal os; the hand is introduced into the vagina; two fingers are inserted into the cervix; a small portion of the placenta, about one inch of which only remains, is detached on either the left or the right side, as one may elect; the knee or foot is seized, and the version completed. External version I believe to be preferable to Hicks' method, as Hicks' method cannot be executed as soon, or as efficiently in this kind of cases, since the placenta is a barrier to the elevation of the head.

The advantages of early version are considerable: by it delivery is expedited; the uterine action rendered more efficient for the expulsion of the child; the hemorrhage arrested; and perhaps the child saved.

The minds of many obstetricians are oppressed with the fear of laceration of the cervix from version. Many have cried out most earnestly against it, and very justly when the whole hand has to be thrust through a cervix dilated no more than I have stated, or as Rigby has done, who, when the os uteri was still closed, has produced *accouchement forcé*, even at the sixth month, after having perforated the placenta, a procedure which should be justly denounced and condemned.

Holding my views of the integrity of the cervix until labor ensues, I believe that the contractions separate the placenta from the os internum, there only remaining a small portion to detach; this may be accomplished, if the attachment is but slight, by the pains, but if firmer the detachment must be artificially accomplished.

The limit of detachment depends upon the size of the child's head, and the separation is fully three to three and a half inches. It would be time misspent, I conceive, to wait any longer before producing version, or to expand the os tincæ by the use of the dilators, or to permit the tampon to be introduced and left in place until the external os is more fully expanded.

I have not seen, in any case of version by this method, even as early as the sixth or seventh month, any laceration or injury to the soft structures of the mother. I could cite cases in which the os uteri has been only dilated to the size of a five-cent piece, and yet the version easily accomplished. I have practiced this course of treatment for over a quarter of a century, and I have not introduced my hand in any case to effect version, whether the placenta was previa or not.

The fears and the opinions of those gentlemen who denounce version are groundless. It is in cases of this nature and during early delivery, when the os tincæ is only opened to the size of a half a dollar, that Barnes proposes to separate the placenta from the cervical zone, till he has reached the limit of expansion of the internal orifice, when he considers "the labor as perfectly safe, and a natural one."

3. Now, as long as any part of the placenta is attached, no matter how small, there is no security for the mother, and there is danger of hemorrhage until delivery is effected. Barnes considers that he separates the placenta from the cervical zone, while I hold that nature effected its detachment previously, and there is only one, or one and a half inches remaining to be detached, in order to arrest the hemorrhage and deliver the patient. The contrast is very evident; they are the reverse of each other.

In my monograph on placenta previa, I advocated this method of treatment as early as the sixth, seventh, or eighth month, as procrastination might entail the death of the mother. Partial or complete cervical detachment, which is the method of Barnes, I have never made trial of, for the reason that I do not consider the placenta is located in the cervical zone, and therefore the practice is not consistent with the anatomical and physiological views which I have advanced.

4. The entire separation of the placenta previous to the delivery of the child.

This method was recommended by Sir James Y. Simpson in many cases where version could not be performed. This method is more particularly advocated when the mother is perfectly exhausted, to avoid the shock to her nervous system.

I have only met with two cases of this nature, in which, from the exhausted condition of the female, this plan was deemed necessary, the cervix being fully two thirds open, and the placenta almost all detached.

Simpson recommended the treatment, as he says, "in cases of primipara in which the placental presentations have given rise to premature labor, and the cervix has been imperfectly developed, and in labor coming on before the seventh month, when the uterus is too contracted to admit of version."

May I ask, How could Sir James accomplish this object? Certainly not when the uterus was contracted, nor when the cervix was imperfectly developed. (If so, then this is a forced delivery, for the hand must be introduced into the cervix, whereby a shock will be given to the nervous system, which is what he wished to avoid.)

The treatment of Sir James is only applicable when the patient is in an exhausted state, or when the cervix, which is possibly the case, is fully half dilated, and the placenta, therefore, easily removed from its slight attachment. It is the only course that could be adopted under such circumstances.

5. The lateral separation is the method which is usually the one adopted not only in this country, but also on the Continent.

6. The forceps claim a passing notice, and they are strongly recommended by some authorities.

In cases of complete central implantation, as a great part of the placenta must be detached, and the head of the child made to adapt itself to the internal orifice, and sustained some time by an assistant, or if firm contractions exist after the separation, the forceps may be applied; but in the early delivery which I have advocated, the external orifice is not sufficiently open to allow the ordinary wide-bladed forceps to be applied, and grasp the head in the superior strait.

The delay in the application may be longer than the time required to accomplish version, or even if the head of the child is grasped by the instruments, it is not certain that it will adapt itself to the superior strait, so as to compress the bleeding vessels perfectly. I have seen but one case in which the head could be fixed and held at the upper strait, after the lateral separation, in which the cervix was not dilated more than a half dollar. In this case were used the narrow-bladed forceps, which can be applied in cases where a circle only the size of a half dollar exists; the head of the child was drawn into the cavity of the pelvis; the forceps were then removed, the labor terminating naturally.

In cases of this nature, when the head of the child is at the superior strait, or held there, I prefer to rely upon the uterine contractions, as the head is more firmly fixed by them, while they do not prevent the forceps being applied, but, on the contrary, render this more easy of accomplishment than during the absence of pains.

In "Guy's Hospital Reports," for 1876, it is stated that the cases of placenta previa in the obstetric service of that institution amounted to forty in eleven years, all of which were terminated by combined external and internal version (Hicks), or in some cases by internal version alone.

Out of my sixty cases, fourteen were of central implantation, with ten recoveries and four deaths, among the chil-

dren. Two of these were ascertained to have been dead previous to labor ; two succumbed to the profuse and rapid hemorrhage. I do not recall a single death of the mother in these cases, ten of which occurred in private practice.

7. The subject of premature labor has, within the last few years, claimed the attention of two of our distinguished colleagues, Drs. Thomas and Parvin. Dr. Thomas, after referring to the paper of Dr. Greenhalgh, read before the Obstetric Society of London, and the discussion to which it gave rise, remarks, independent of this evidence, "I know of no work, essay, or text-book which gave this advice at any time previous to the appearance of Dr. Greenhalgh's paper." It was in 1868 that Dr. Thomas, in his paper on the history of eight cases, advocated premature delivery in cases of placenta previa, and considered it as an innovation.

When I read this part of Dr. Thomas's paper, I must admit that I was very much surprised, for I had always believed, since I had perused Rigby's work on uterine hemorrhage, and especially the writings of Dr. D. Davis, who was Professor of Midwifery in the University of London, that delivery should be instituted in cases of placenta previa as early as practicable.

Dr. D. Davis says in case of unavoidable hemorrhage, that Rigby insists upon the induction of premature labor. This he proposed to do by introducing the hand, of course more or less forcibly, into the uterus, and bringing down the foot.

Rigby himself says "that we should not hesitate to attempt speedy delivery, even though to the touch the uterus is quite shut."

Dr. D. Davis remarks that "if after a careful examination we are satisfied that it is a case of unavoidable hemorrhage, our imperative duty is to discharge the liquor amnii, it being an object in a case of this description to effect the induction of labor as speedily as possible, and even at the sixth month.

Dr. J. Hall Davis, at the meeting of the Obstetrical So-

ciety, held July 6, 1864, stated that he had advocated this treatment since his father's death.

Other authorities have also expressed the same views. I agree with our distinguished colleague that the more recent works, such as Ramsbotham, Hodge, Meigs, Cazeaux, and Scanzoni, do not give that prominence to it which the subject deserves. The treatment by these authorities was the tampon, astringents, cold applications, and bandaging the abdomen.

In my former paper, published in 1864, I make the following remark: "If the flowing is profuse or active, and the cervix not yet expanded, the os tincæ closed, whether this occur at the seventh, eighth, or ninth month, or at full term, proceed with the delivery of the patient. Velpeau remarks: "The termination of labor should never, under any pretext, be left to the powers of nature, when the hemorrhage incontestably occurs in consequence of the insertion of the placenta over the os uteri.

The eighth or tenth time of the dilatation is not ever necessary, provided the os uteri is sufficiently soft to allow the hand to enter.

The lateral method is adopted early. Others have thought that there was no time to temporize, but that they should perforate or rupture the part that closes the os uteri, and, whether this occur at the seventh, eighth, or ninth month, or at full term, proceed with the delivery of the patient.

I certainly did not consider it as innovation, but believed it was usually resorted to, as my observations on the non-development of the cervix uteri during gestation were made as far back as 1851. I shall arrogate to myself, without any feeling of egotism, the priority of this discovery, setting aside the observations of Wiltbrecht in 1750, or those of my preceptor, Cazeaux, in 1840.

I can find no evidence to the contrary, so far as I have been able to consult books and diagrams. This may appear irrelevant to the subject, but the recognition of such a fact has a practical influence of great importance in cases of pla-

centa previa. A discovery of such a nature gives a true and simple physiological elucidation of the proper treatment of such cases, and leads, to the strong belief that the mother's life can be saved oftener, and to more hope also for the infant.

My experience in the treatment of placenta previa, as I believe, justifies me in asserting that such cases can and will be as successful and favorable in their issue as any of accidental uterine hemorrhage occurring at any period of gestation.

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